CombEEv User's Guide

by

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Introduction

When generating extreme loads for a loads document for a wind turbine, one usually combines extreme loads from short simulations using discrete wind events and long turbulence simulations. Because these types of files have different lengths, you cannot use one Crunch run to process all of them. To make combining the Crunch results a little easier, I created a Perl script called CombEEv to merge the results of multiple Crunch runs. It reads in multiple .eev files generated by Crunch and produces a new file that contains the extremes of the extremes.

In case you do not know much about Perl, it is an interpreted scripting language with many powerful features. For those folks who have struggled to get DOS batch files to do useful things, Perl is an excellent replacement. As with DOS batch files, you initiate Perl scripts at a command prompt.

I first came across Perl when setting up our web pages. Perl is commonly used to do many of the intelligent things web pages do. It is available for many platforms, and it is not very difficult to learn. That makes it an excellent choice to automate many of our boring, routine tasks.

Retrieving Files from the Archive

You should download the CombEEv archive from our web server page http://wind.nrel.gov/designcodes/combeev/. The file should have a name such as *combeev_v200.exe*. Create a CombEEv folder somewhere on your file system and put this file there. You can double-click on it from Windows Explorer or by entering *combeev_v200* at a command prompt with the CombEEv folder as the current directory. This will create some files and folders.

Distributed Files

The files included in the archive of RunIEC are as follows:

ArcFiles.txt	The list of files that are written to the archive
Archive.bat	The batch file that creates the archive
ChangeLog.txt	The list of changes to the CombEEv Perl script
CombEEv.doc	This user's guide in Word format
CombEEv.pdf	This user's guide in PDF format
CombEEv.pl	The CombEEv Perl script
Test01.eev	The sample output file
Test01a.eev	One of the sample input files
Test01b.eev	Another of the sample input files

Installing Associated Software

If you have not already done so, you need to install a Perl interpreter on your computer. You can download a freeware Perl interpreter from ActiveState at http://www.activestate.com/. You should also install it so that it can be run from any folder. The examples below assume that you can invoke the Perl interpreter by entering *perl* at a command prompt. If you use another name, substitute it into the example below. You should also make sure that the extension *.pl* is associated with your Perl interpreter.

Modifying the Perl Script

You need to modify the Perl script before you can run it on your PC. Edit the file named *CombEEv.pl* with your favorite editor, and you will find a block of code near the top after the comment "User-defined parameters." These five parameters are the only ones you'll need to modify unless you want to get into some serious Perl programming.

The first one is an array (@in_files) that stores the list of input file names. Enter them within the parentheses, enclose each one in quotes, and separate them with commas. The second parameter ($have_units) is set to zero if your input files do not have a line of units after the column titles or one if they do. The third parameter ($num_tables) is the number

of tables in each file. All files must use the exact same format. The fourth parameter ($out_file) is the name of the output file. Enclose it in quotes and any valid file name will work. The last parameter ($out_fmt) is the output format specifier used to generate data values. This version of the code requires both input and output values to consume 11 spaces per value, including any white space between the numbers. I recommend either "%11.4f" or "%11.2e" for best results. The sample input file shows examples of what you will get for a few formats.

Running CombEEv

To test the script, you can use my sample input files. Try that first before using your own input files with CombEEv. Open up a command window in the CombEEv folder. Enter *combeev.pl* at the command prompt—the script will read *Test01a.eev* and Test01b.eev. It will then generate *Test01.eev*.

After testing the script, copy it to the folder that contains your Crunch output, edit it, and execute it by entering *combeev.pl* at the command prompt. You can also double-click on it in Windows Explorer.

Known Limitations

- CombEEv does not work with tab-delimited Crunch files.
- CombEEv works only with files in which the data values consume 11 characters, including white space between numbers.

Known Bugs

- None.

Caveats

The National Renewable Energy Laboratory (NREL) makes no promises about the usability or accuracy of CombEEv, which is essentially a beta code. NREL does not have the resources to provide full support for this program. *You may use CombEEv for evaluation purposes only*.

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Feedback

If you have problems with CombEEv, please contact Marshall Buhl. If he has time to respond to your needs, he will do so, but please do not expect an immediate response. Please send your comments or bug reports to:

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